

STUDY ON BEHAVIORAL FINANCE, BEHAVIORAL BIASES, AND INVESTMENT DECISIONS

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ABSTRACT

Behavioral finance is an open-minded finance which includes the study of psychology, sociology, and finance. Behavioral finance micro examines behavior or biases of investors and behavioral finance macro describe anomalies in the efficient market. Nowadays, behavioral finance is not a new concept, the existence, and impact of behavioral biases in investor's behavior and human judgment are huge. In this paper, we will review various studies in this area so as to have a clear understanding of the behavioral finance and its significance in the financial decision making of investors.

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INTRODUCTION

In standard (traditional) finance theory considers that investors are 'Rational'. Rationality means two things (Barberies 2005):

- First, when they receive new information, agents update their beliefs correctly, in the manner described by Bayes's law.
- Second, given their beliefs, agents make choices that are normatively acceptable, in the sense that they are consistent with Savage's notion of Subjective Expected Utility Theory (SEU).

According to Jensen and Merckling (1994), Traditional finance theory stands directly on the notion of the 'Rational man', a person who is much different from the individual. According to Montier (2002), the rational construct assumes that individuals, both investors, and managers are capable of understanding vastly complex puzzles and conduct endless instantaneous optimizations. Due to such thinking, the concept of market efficiency comes into existence. It was a central part of the traditional theory and behavioral finance theory.

"An 'efficient' market is defined as a market where there are large numbers of rational, profit maximizes actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based both on events that have already occurred and on events which, as of now,

the market expects to take place in the future. In other words, in an efficient market at any point in time, the actual price of a security will be a good estimate of its intrinsic value” (Fama, 1965).

In the 1960s and 1970s, in the field of finance a new concept has been studied by psychologist Daniel Kahneman and Amos Tversky, recognized as the Fathers of Behavioral Finance. The new field-behavioral finance is the study of psychology, sociology, and finance. It is mainly considers how one’s taste, perception, and thoughts impact on their financial and investing decisions. Some of the key definitions of behavioral finance are discussed here. According to Hirschey and Nofsinger (2008), behavioral finance is the study of cognitive errors and emotions in financial decisions”. It is also known as the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on the market (Sewell, 2007). Behavioral finance relaxes the traditional assumptions of financial economics by incorporating these observable, systematic, and very human departures from rationality into standard models of financial markets. The tendency for human beings to be overconfident causes the first bias in investors and the human desire to avoid regret prompts the second (Barber and Odean, 1999).

Schindler (2007) lists three main cornerstones of research in Behavioral finance are sociology, psychology, and finance. These fields as explained under.

- **Sociology:** is the systematic study of human social behavior and groups, and the influence of social relationship on attitude and behavior
- **Psychology:** is the scientific study of behavior and mental processes, which is affected by human’s physical, mental, and external environments
- **Finance:** is the discipline concerned with determining the value and making decisions. The finance function allocates capital, including the acquisition and allocation.

According to Pompian (2006), behavioral finance has two subtopics-

- Behavioral Finance Micro (BFMI) examines behaviors or biases of individual investors that distinguish them from the rational actors envisioned in classical economic theory.
- Behavioral Finance Macro (BFMA) detects and describes anomalies in the efficient market hypothesis that behavioral models may explain.

HUMAN BEHAVIORAL THEORIES

Prospect Theory

The Prospect theory was originally conceived by Kahneman and Tversky (1979) and later resulted in Daniel Kahneman being awarded The Nobel Prize for economics. The theory distinguishes two phases in the choice process: the early phase of framing (or editing) and the subsequent phase of evaluation. Tversky and Kahneman, by developing the prospect theory, showed how people manage risk and uncertainty. In essence, the theory explains the apparent irregularity in human behavior when assessing risk under uncertainty (Subash 2012). People place much more weight on the outcomes that are perceived more certain than that are considered merely probable, a feature known as the “certainty effect” (Kahneman & Tversky, 1979).

Heuristics Theory

“Heuristics are simple efficient rules of the thumb which have been proposed to explain how people make decisions, come to judgments, and solve problems, typically when facing complex problems or incomplete information. These rules work well under most circumstances, but in certain cases lead to systematic cognitive biases” – Daniel Kahneman (Parikh, 2011). Tversky and Kahneman identified the influence of human heuristics on the decision making process. Tversky defined heuristic as a strategy, which can be applied to a variety of problems, that usually—but not always—yields a correct solution. People often use heuristics (or shortcuts) that reduce complex problem solving to more simple judgmental operations (Tversky and Kahneman, 1981). The heuristic decision process is the process by which the investors find things out for themselves, usually by trial and error, lead to the development of rules of thumb. In other words, it refers to rules of thumb, which humans use to make decisions in complex, uncertain environments (Brabazon, 2000). According to Johnsson, et al. (2002), the prospect theory and heuristic also included these-

Table 1: Theories of Behavioral Finance

The Prospect Theory	Heuristics
Loss aversion	Herd behavior
Mental accounting	Overconfidence & over under reaction
Self control and regret	Anchoring

Source: Johnsson, et al. (2002)

Behavioral finance equips finance professionals with a magnifying lens which allows them to scrutiny, understand, and overcome many proven psychological traps that involving behavioral biases i. e. emotional biases and cognitive biases. It is applicable to

- Investors – (Retail & High Net-worth Individuals)
- Corporate (Mutual Fund House, FII's)
- Markets (Equity, Commodity, Currency, Debt etc)
- Regulators (SEBI/FMC etc.
- Finance Professionals – Portfolio Manager, Analysts, Policy Makers etc.

REVIEW OF LITERATURE

A review of literature consigns a research study in proper perspective by showing the quantity of work already carried out in the related area of the study. The purpose of this part is to understand the results of various studies already undertaken in the relevant field and to find out the research gap. Several researchers have studied factors influencing investor investment decisions from various perspectives and have documented various findings categorized into two aspects first is the review of Indian studies and second is a review of international studies.

Indian Studies

Lal (1992) examined the individual investors to know the profile of Indian investor, using the sample of 1200 individual investor from different regions of India. The study concluded that the Indian investor preferred to invest in larger portfolios with more than five companies.

Gupta et. al (2001) examined and compared the pattern of investor's preferences among mutual fund organizations/schemes and other financial products using 312 household investors. The study found that Mutual fund scheme UTI owned US 64 was the most popular but its position with regard to equity schemes was weaker than others.

Rajarajan (2002) identified the association between the demographic profile and the risk-bearing capacity of 405 individual investors from Chennai using Chi-square test and correspondence analysis. The study found that a strong association was found between the demographic profile of individuals and their risk-bearing capacity. Rajarajan in 2003, in another study, identified the determinants of portfolio choice of individual investors using multiple regression analysis. The study concluded that the expected rate of return on investments, risk-bearing capacity, a loss avoidance had positively related.

Kiran and Rao (2004), identified the investor group segment on the basis of demographic and psychographic characteristics of the individual from 96 respondents using Multinomial logistic regression and factor analysis.

Ranganathan (2006) evaluated the financial behavior and to access the conceptual awareness of individual investor towards the mutual fund. 100 respondents from Mumbai from sept 2004 to oct 2004 using Factor analysis and multinomial logistic regression. The study concluded that Factors related to funding qualities, fund sponsor qualities and investor related services effect on decision-making process.

Gupta and Jain (2008), examined the investor's performances among the various types of financial assets and also their problems concerning the stock market. The study was based on Descriptive analysis using 1463 household investors. The study found that the household investors preferred to invest share as compared to mutual funds due to relatively lower returns.

NCAER(2008), described gain insights into the motives of financial savings, the degree of financial security and sophistication of the saving and investment decisions made by households using a sample of 60,000 urban and rural households. The study concluded that People in India saved for the long-term goals; they saved their money into banks accounts, post office deposits and in other liquid assets as compared to investing them in the stock market.

Walia and Ravikiran (2009), analyzed the investors' expectations toward mutual funds in Punjab (India) using 100 individual investors from different regions. The study used Ranking and rating method, chi-square and ANOVA and APS and concluded that the preference of investors varies.

Kabra et. al (2010), studied the factor that influenced the investment risk tolerance and decision-making process on the basis of age and gender, using a sample of 196 investors working in govt. and the private sector in India. The study concluded that the investor's age and gender affected their risk-taking capacity. Parashar (2010) described the effect of personality traits on investment choice made by 100 individual investors using Cluster analysis, correspondence analysis Kruskal Wallis test and factor analysis. The study found that the demographic and personality type affect the behavior of the investor.

NCAER (2011), described the behavior of household investor in dealing with various financial instruments which were traded in the market regulated by SEBI using 38,000households across 44 cities and 40 villages. The study concluded that the degree of risk aversion was found to be extremely high in Indian households.

Dawar and Wadhwa (2011), identified the factor influencing investor's behavior in Punjab using 275 investors living in Jalandhar. The study concluded that neutral information, accounting information, selfimage/ firm image, social relevance, advocate recommendation, and personal financial needs were found to influence investor's behavior in Punjab.

Subash (2012), showed the impact of certain behavioral biases on decision-making process of individual investors in the Indian stock market using primary data of 92 respondents. The study found that gambler fallacy, anchoring, and hindsight biases were affecting the young investors more than experienced investors.

Chitra K. & Jayashree T. (2014) investigated the impact or interaction of demographic profile on investor's behavior by using descriptive analysis, factor analysis, and ANOVA. The study mainly included five factors namely Representativeness, Conservatism, Regret Aversion, Price Anchoring, and Overconfidence. The data was collected through questionnaire from 110 investors based on convenient sampling.

Mamta (2014), investigated the presence and analyze the impact of Heuristic Driven and Frame Dependent biases on different Stock market indicators and to find out which bias is most pronounced in the Indian context using Secondary data, a sample of different market indicators of Nifty 50 stocks, for a Period 2006-2013. The study found that overconfidence and the disposition biases increase the market and individual security transaction Volume respectively.

Rushdi (2014) examined the impact of various psychological influences on investment behavior of salaried investors in India using 1627 respondents. The study concluded that Demographic factors, gender appears to be the most significant influence on all aspects of investment behavior.

Kannadhasan (2015) described the role of behavioral finance in investment decisions. The author studied the prospect theory and heuristic decision process with their implications. The study concluded that all investor does not face the same problem in decision-making process. All the behavioral factors effect on the decisions of the investors

Neelakantan (2015) identified the profile of the investors & ascertain a relationship between demographic Factors and risk preferences and to develop a suitable model for investor's behavior using the structural equation model (SEM) approach. The study resulted that the demographic and psychological factors/biases affect the behavior of the investor.

Sukheja G. (2016), studied biases, moods and emotions influence the financial behavior of individuals based on a detail study using an empirical approach. The study mainly describes the Overconfidence, Anchoring factors in the investment decision.

Mounika (2017) studied the relevance of behavioral finance in investment decisions using behavioral biases impact on investors. The study concluded that investors do not always act in rational and behavioral biases have an impact on investor's decision making.

International Studies

Warren et al. (1990) investigated the segment of the investor on the basis of demographic and lifestyle characteristics. Using the sample of 152 respondents, their study showed the segmented the investors on the basis of their investment behavior i. e. Active and passive investors as well as light and heavy investors.

Johnsson, Lindblom & Platan (2002), studied the behavioral finance and investor behavior during the speculative bubble at the end of the 1990s through a survey of private investor in Sweden. The study shows that overconfidence, earnings, the profitability of companies is the main reason for fall in market values after 2000.

Massa M (2002), focused on two aspects of investors behavior, first is risk-taking which include loss aversion, house money effect and mental accounting and second is stock picking with information based familiarity and pure familiarity. For analyzing the impact of behavioral biases on risk-taking and stock picking, the author focused on holding & long-term behavior of investors with yearly horizons. The result shows that there was an impact of prior gain/losses on investors risk-taking but not on mental accounting.

Barberis N & Thaler R. (2003) described behavioral finance, market efficiency, prospect theory, limits to arbitrage, investor psychology, and investor behavior & beliefs in detail. The study also focused on behavioral finance application in various fields like the stock market, corporate finance and in investor behavior.

Merikas et. al (2004) examined the factors that influence the behavior of an investor in Greece stock exchange using 150 respondents from the Athens stock exchange with Factor analysis. The study found that the variable identified by the classic wealth maximization criteria.

Wood and Zaichowsky (2004), identified and characterize individual investor into a segment based on their investing attitude and behavior using the sample of 90 respondents. The study concluded that tolerant traders, confident traders, loss adverse trader, and conservative long-term trader were identified.

Al-Ajmi (2008), determined the risk tolerance of individual investors in Bahrain using 1,484 individual investors. The study concluded that Investors with more financial commitment show a decline towards risk tolerance.

Zoghmi and Matoussi (2009) identified the psychological factor that influences the investor's behavior in Tunisia using the sample of 92 brokers. The study concluded that Precaution, underconfidence, conservatism, under optimism and informational inferiority complex is the factor that impacts on the behavior of inventors.

Hood et. al (2011) examined the factors that influenced the investment decision of socially responsible investors in U. S. Sample Chosen from Nationwide discount brokerage list from 1991 to 1996. The study described that Social characteristics and personal values had the impact on stock owned by an individual investor.

Thomas, Joost M. (2011), showed that how investors behavior change and their impact during the 2007-2009 financial crisis using records of clients and the monthly survey data. The study concluded that investors with a higher level of risk perception have more turnover as compare to those investors who have a lower risk level.

Bikas E., Jureviciene D. et. al. (2012), analyzed the impact of behavioral factors like recognition, emotional tolerance, and psychological effect on the financial decisions of non- professional investors. The author used historical- the orientation perspective through descriptive and comparison method.

Coffie (2013), exposed the implications of individual stock investors being affected by behavioral finance models and to study whether there are any positive correlations between major stock investment strategies and behavioral finance theories in Wolverhampton (England). The results of the survey revealed minor correlations between certain strategies and Herding, Anchoring, Prospect and Regret theories.

Athur A. (2014), studied behavioral biases that influence the individual investors decision in Kenya using primary data collected from 30 individual investors through snowball sampling technique. The study concluded that Representative, an illusion of control, cognitive, dissonance; herd instinct and hindsight biases contributed significantly correlation with individual investor's decision, whereas loss aversion, self-attribution, regret aversion, and over-optimism bias were not

significantly related with individual's decision.

Sasirekha (2015) studied the determinants of investment behavior of individual investors of the information technology sector in Coimbatore using 482 respondents, from September 2011 to March 2015. The study exposed the fact that, the investment strategies of the investors are largely influenced by the socio-economic factors and it further reveals that the behavioral bias plays a vital role in determining the investment process of Individual investors.

Ahmad B. & Durri K. (2015), Fakhry B. (2016), both based on the review of existing literature related to behavioral finance and Efficient Market Hypothesis (EMH). Dessi R & Zhao (2017) describes overconfidence, stability, investment, cultural differences and cultural transmission using evidence from 38 countries. Greg Fibeck et. al (2017) provided a panel discussion on behavioral finance, behavioral biases, portfolio management, and their influences on different perspectives held at Sandestin, Florida on Nov 2017.

It is emerging from the literature that all the studies are mainly based on behavioral factors, psychological influences, perceptions and on personality traits. Too much literature is based on primary surveys. In India, not much research was undertaken in respect of behavioral biases and their impact on individual investor's investment decisions and also on Indian financial market. There is no effective and comprehensive study which related to analyzing the impact of behavioral biases on Indian financial market with the use of secondary data.

RESEARCH GAP & PROBLEM IDENTIFICATION

After a thorough study of research done in the field of investors in the financial market, one critical aspect of research in India is missing that is behavioral finance research in detail to understand the financial decision of investors into Indian financial Market. In India, research is mainly focused on investors' behavior from an only consumer buying behavior perspective, which is not sufficient to understand the economic decision of investment. From a generalized model of consumer behavior (investor attitude & behavior), one infers the need for focused study of investors behavior rather than consumer behavior in general, which can pinpoint issues of investors decision making, their perception and behavior from behavioral finance theory perspective. This is a new paradigm shift in the fundamental theory of finance for economic decision and behavior of investors in the financial market (Neelakantan, 2015).

BEHAVIORAL BIASES

Research in psychology has documented a range of decision-making behaviors called biases. These biases can affect all types of decision-making, but have particular implications in relation to money and investing. The biases relate to how we process information to reach decisions and the preferences we have (Shefrin, 2000). More brilliant research seeks to categorize the biases according to some kind of meaningful framework. Some authors refer to biases as heuristics (rules of thumb), while others call them beliefs, judgments, or preferences; still, other scholars classify biases along cognitive or emotional lines. While "this sort of bias taxonomy is helpful—an underlying theory about why people operate under bias has not been produced. Instead of a universal theory of investment behavior, behavioral finance research relies on a broad collection of evidence pointing to the ineffectiveness of human decision making in various economic decision-making circumstances" (Pompian 2006). According to Pompeian, biases are mainly classified into two types, given in below table-

Table 2: Types of Biases

Emotional Biases	Cognitive Biases
1. Status Quo Bias	1. Availability Bias
2. Regret Aversion Bias	2. Framing Bias
3. Loss Aversion Bias	3. Self Attribution Bias
4. Confirmation Bias	4. Overconfidence Bias
5. Optimism Bias	5. Cognitive Dissonance Bias
6. Self Control Bias	6. Hindsight Bias
7. Endowment Bias	7. Mental Accounting
	8. Anchoring And Adjustment Bias
	9. Ambiguity Aversion Bias
	10. Representativeness Bias
	11. Conservatism Bias
	12. Illusion Of Control Bias
	13. Recency Bias

Source: Pompian (2006)

Investors may be inclined toward various types of behavioral biases, which lead them to make cognitive errors. People may make predictable, non-optimal choices when faced with difficult and uncertain decisions because of heuristic simplification. Behavioral biases, abstractly, are defined in the same way as systematic errors are, in judgment (Chen et al, 2007). There are so many biases types and categories which define a different number of biases which effect on the behavior of investor, according to Montier (2002), a taxonomy of biases, figure no.1 given as below define there are broadly three types of biases and all three have different categories. There are so many biases in human behavioral theories; the detailed analysis of every bias is beyond the scope of any meaningful research.

Table 3: Taxonomy of Biases

Self Deception (Limits to learning)	Heuristic Simplification (Information processing errors)		Social Interaction
Over optimism Illusion of control, Illusion of knowledge	Representativeness	Emotion/Affect	Imitation
Overconfidence	Framing	Mood	Contagion
Self Attribution bias	Categorization	Self control	Herding
Confirmation bias	Anchoring/Saliency	Ambiguity aversion	Cascades
Hindsight bias	Availability bias		
Regret theory	Cue Competition		
Cognitive dissonance	Loss aversion/Prospect theory		

Source: Montier (2002).

According to the model used in the study Subash (2012), which is also defined in Pompeian 2006 study, nine behavioral biases namely, **Overconfidence Bias**-Overconfident investors overestimate the probability that their personal assessments of a security's value are more accurate than the assessments offered by others (Pompeian 2006). Psychologists have determined that overconfidence causes people to overestimate their knowledge, underestimate risks, and exaggerate their ability to control events (Subash 2012). Overestimates related to risk, share prices and other related factors related to investing decision mainly described. **Representativeness Bias**- This perceptual framework provides an expedient tool for processing new information by simultaneously incorporating insights gained from (usually) relevant/analogous past experiences. It endows people with a quick response reflex that helps them to survive. Sometimes, however, new stimuli resemble—are representative of—familiar elements that have already been classified. In reality, these are drastically different analogues. In such an instance, the classification reflex leads to deception, producing an incorrect understanding

of the new element that often persists and biases all our future interactions with that element (Pompian 2006). **Anchoring and Adjustment Bias-** This study clearly demonstrated that anchoring is a very common bias, applying to many areas of finance and business decision making. Wealth management practitioners need to be keenly aware of this behavior and its effects (Pompian 2006). **Cognitive Dissonance Bias-** Cognitions, in psychology, represent attitudes, emotions, beliefs, or values; and cognitive dissonance is a state of imbalance that occurs when contradictory cognitions intersect. The term cognitive dissonance encompasses the response that arises as people struggle to harmonize cognitions and thereby relieve their mental discomfort (Pompian 2006). **Mental Accounting Bias-** First coined by University of Chicago professor Richard Thaler, mental accounting describes people's tendency to code, categorize, and evaluate economic outcomes by grouping their assets into any number of nonfungible (noninterchangeable) mental accounts. Mental accounting bias can cause investors to irrationally distinguish between returns derived from income and those derived from capital appreciation (Pompian 2006). **Hindsight Bias-** This behavior is precipitated by the fact that actual outcomes are more readily grasped by people's minds than the infinite array of outcomes that could have but didn't materialize. Therefore, people tend to overestimate the accuracy of their own predictions. This is not to say, obviously, that people cannot make accurate predictions merely that people may believe that they made an accurate prediction in hindsight. Hindsight bias has been demonstrated in experiments involving investing—a few of which will be examined shortly—as well as in other diverse settings, ranging from politics to medicine (Pompian 2006). **Regret Aversion Bias-** People exhibiting regret aversion avoid taking decisive actions because they fear that, in hindsight, whatever course they select will prove less than optimal. Basically, this bias seeks to forestall the pain of regret associated with poor decision making. It is a cognitive phenomenon that often arises in investors, causing them to hold onto losing positions too long in order to avoid admitting errors and realizing losses (Pompian 2006). **Herding Bias-** Herding in financial markets can be defined as mutual imitation leading to a convergence of action (Hirshleifer and Teoh, 2003). This is the most common mistake where investors tend to follow the investment decisions taken by the majority. That is why, in financial markets, when the best time to buy or sell is at hand, even the person who thinks he should take action experiences a strong psychological pressure refraining him to do so. The main reason for this is pressure from or influenced by peers. The Reliance Power IPO, 2008 is an example of an instance where many investors subscribed without having full information on the issue. Investors apply to “herd behavior” because they are concerned with what others think of their investment decisions (Scharfstein and Stein, 1990). **Gamblers' Fallacy Bias-** Kahneman and Tversky (1971) describe the heart of gambler's fallacy as a misconception of the fairness of the laws of chance. One major impact on the financial market is that investors suffering from this bias are likely to be biased towards predicting reversals in stock prices. Gamblers' fallacy arises when investors inappropriately predict that trend will reverse and are drawn into contrarian thinking. Gamblers' Fallacy is said to occur when an investor operates under the perception that errors in random events are self-correcting. For instance, if a fair coin is tossed ten times and it lands on heads each time, an investor who feels that the next flip will result in tails can be said to be suffering from this bias (Subash 2012).

CONCLUSIONS

In concluding, it is hard to explain the recent financial and investment system without referring to the behavioral finance theory. The nature of behavioral finance and the Efficient Market Hypothesis (EMH) in detail explained by so many authors such as Ahmad B. & Durri K. (2015), Fakhry B. (2016). Another factor like behavioral biases and their impact on individual investors decision-making highlighted by Warren et al. (1990), Johnsson, Lindblom & Platan (2002), Athur A. (2014), and Chitra K. & Jayashree T. (2014). In the book by Pompian, Michael M. (2006) described in-depth

practical application of behavioural finance, wealth management, investor biases and impact of gender, personality factors on investment decision. Sukheja G. (2016) provides the impact of issues on decision-making process of individuals, groups, and organizations. Baker & Nofsinger (2010), Subrahmanyam (2007), and Razeq (2011) studied lack of consensus in behavioral finance theory. Subash (2012), Athur (2013), and Jing Chen (2011) all these authors studied the individual investors decision making process in behavioral finance. They resulted that behavioral biases had an impact on the decision process of individual investors. The finding of the Chitra, Adams, and Thornton (2008) indicated that cognitive bias, framing effect and heuristic biases had influenced the students. So after a review of the related data to behavioral finance, we can say that behavioral finance has a vital role in decision-making process of an individual, organization or any other investors. Behavioral biases, which has so many types, influenced the decision making process of an investor. In India, this is the right time to appraise the behavioral biases and their impact on individual investor's decision-making and on the financial market.

RELEVANCE

The findings would help create awareness to the individual investors on the behavioral biases that they must take cognizance of when making investment decisions. Stockbrokers and mutual fund companies would be able to identify biases that mostly influence investment decisions so that they are able to properly educate investors on how to leverage on the biases. It will contribute to the general body of knowledge by enriching the existing literature in the field of behavioral finance. It will analyze the presence and impact of behavioral biases in investing decisions of individual investors because behavioral finance is a newly emerging field to understand financial behavior and decision making of investors in India.

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